

NASA TECH BRIEF

Goddard Space Flight Center



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Radiation Diffraction Calculation Program (DIFF2)

The problem:

Compute the maximum possible strength of the echo signal reflected from the earth when a high altitude tracking and data relay satellite (TDRS) transmits to a low altitude user satellite. The echo signal interferes with the reception of direct transmission.

The solution:

A computer program, DIFF2, computes the maximum possible strength of an interference pattern sent from a high altitude TDRS to a low altitude user satellite. Specified conditions are satellite configuration, antenna characteristics, and earth model assumptions.

How it's done:

The program is based on multipath geometry using a Cartesian coordinate system centered on the earth's surface. Known parameters are the positions of the high and low altitude satellites, the distance of the earth's center from the lower satellite, the angular separation and antenna characteristics.

The program could be used to calculate the radiation patterns of any electromagnetic rays being diffracted from any known surface, for various reflector, feed, and polarization configurations and options.

Notes:

1. This program is written in FORTRAN for the IBM-360 computer.
2. Requests for further information may be directed to:

COSMIC
112 Barrow Hall
University of Georgia
Athens, Georgia 30601
Reference: B71-10462

Patent status:

No patent action is contemplated by NASA.

Source: Programming Methods, Inc.
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